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## **Perpetuum wins contract to supply Southeastern Railways with Energy Harvester powered Wireless Sensor Systems for 148 trains**

Perpetuum announces that it has received an order from Southeastern Railways to supply wireless sensor systems for all 148 of its Electrostar train stock (618 cars). The sensor systems monitor wear of the bearings and wheels to help maintenance engineers determine when maintenance is needed. Perpetuum's world leading Energy Harvesters enable the self powered maintenance free wireless sensors to be fitted in a few minutes without complex retrofit wiring. This new agreement follows the successful installation of Perpetuum sensor systems on a number of Southeastern trains in 2012.

Perpetuum's sensor systems collect vibration data while a train is in motion and this data is transmitted wirelessly to Perpetuum's database where software algorithms look for the signatures of bearing and wheel wear. The result of this analysis can then be monitored remotely using web based access. Maintenance engineers can then use the data to view the condition of their assets. Isolated faults can then be rectified before they become a problem, thus improving reliability and safety as well as dramatically reducing operational and maintenance costs. This in turn improves asset utilisation for the operator and reduces service disruption for passengers.

Current practice on most UK trains is to service them on a mileage basis. Therefore components are replaced regardless of their condition and even good bearings are replaced. However the Perpetuum system opens up the opportunity of moving to a "maintain on need" regime which enables massive cost savings to be made. It also means that premature failures can be identified thus improving safety. Often improved safety has a cost but this system enables costs to be reduced whilst at the same time improving safety.

**Commenting on the contract, Perpetuum CEO Steve Turley said:** "The market reaction to Perpetuum's sensor products led by Southeastern Railways has been very positive. However the interest in our wireless condition monitoring system is global and we are in discussions with over 20 rail companies worldwide. Our wireless condition monitoring systems provide our customers with information that was not available before, enabling operators to look at maintenance in a different way and deliver material improvements for operators and passengers.

"Part of the strength and uniqueness of our system is that it is very easy to fit. There is no wiring and no need for batteries as the systems are equipped with our proprietary energy harvesters that convert the vibration of the train into power and all data is transmitted wirelessly. This allows our customers to install the sensor systems with minimal disruption to their services."

**Wayne Jenner, Engineering Director of Southeastern Railways said:** "The Perpetuum product has been deployed on a trial basis on some of our trains over the past year and we have been very impressed by the information it provides and the ease of use. We foresee a rapid return on the investment and a solution to unlocking a number of important issues. The system has the potential to redefine the way we undertake some significant and costly elements of fleet maintenance."

Perpetuum's innovative technology has attracted attention from from European train operators in a number of countries including Sweden, Italy, Spain, Ireland and Germany.

Background:

Established in 2004, Perpetuum started with the concept that mechanical vibration can be converted into electrical energy used to perpetually power autonomous, maintenance-free industrial wireless sensor nodes and Perpetuum's product was first used in the industrial wireless sensors market Perpetuum's technology is incorporated into Emerson and Honeywell's wireless monitoring solutions.

The technology originated from the University of Southampton (UK) and Perpetuum is backed by venture capital investors Environmental Technologies Fund, IP Group, Spark Ventures, Albion Ventures and Wyvern Fund.

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